

#### ABSTRACT OF THE DISCLOSURE

An apparatus for detecting chemical substances which is high in sensitivity and selectivity is provided. An organic acid or an organic acid salt is used to generate an organic acid gas from an organic acid gas generator to be mixed with a sample gas for introduction into an ion source for ionization, thereby obtaining a mass spectrum by a mass analysis region. A data processor determines the detection or non-detection of a specific  $m/z$  of an organic acid adduct ion obtained by adding a molecule generated from the organic acid to a molecule with specific  $m/z$  generated from a target chemical substance to be detected based on the obtained mass spectrum. When there is an ion peak with the  $m/z$  of the organic acid adduct ion, the presence of the target chemical substance to be detected is determined, and an alarm is sounded. False detection can be prevented.